

REMARKS

Claims 1-42, 48, 52 and 55-57 are cancelled; claims 43, 45, 47 and 61-64 are amended; and claims 43-47, 49-51, 53, 54 and 58-65 are pending in the application.

Claims 43, 51, 53, 54 and 58-63 stand rejected as being anticipated by Suh. Applicant has amended independent claims 43, 61, 62 and 63, and believes that such amendments clarify the meaning of the claims and places the claims in condition for allowance over Suh.

Referring first to claim 43, such recites a capacitor construction comprising first and second capacitor electrodes, and a perovskite-type dielectric material between the first and second electrodes. The perovskite-type dielectric material is recited to comprise a first layer proximate the first electrode, and a second layer against the first layer and further from the first electrode than the first layer. Further, the perovskite-type dielectric material is recited to comprise barium, strontium, titanium and oxygen throughout the first and second layers, and the second layer of the perovskite-type dielectric material is recited to have a different degree of amorphous content relative to crystalline content than the first layer of the perovskite-type dielectric material.

The amendment to claim 43 changes a limitation that had previously been worded that the second layer had a different "amount of crystallinity" than the first layer to the limitation that the second layer has a different "degree of amorphous content relative to crystalline content" than the first layer. The amendment to claim 43 is supported at, for example, paragraphs 21 and 22 of Applicant's disclosure, and therefore does not comprise "new matter".

Claim 43 is allowable over the cited reference of Suh for at least the reason that the reference does not suggest or disclose the claim 43 recited perovskite-dielectric material comprising a second layer with a different degree of amorphous content relative to crystalline content than the recited first layer.

The Examiner has previously noted that Suh refers to a perovskite-dielectric material comprising two layers which have different crystal structures relative to one another. For instance, at col. 2, line 52 through col. 3, line 18, Suh describes a process wherein a first layer of a perovskite-dielectric material is formed to have relatively large crystalline grains, and a second layer of the material is formed to have much smaller crystalline grains.

Applicant respectfully submits that Suh's teaching of a perovskite-type dielectric material having two layers with different crystalline structures does not anticipate the claim 43 recited perovskite-type material having two layers with a different degree of amorphous content relative to crystalline content than one another. Suh's perovskite-type material layers are both described by Suh as being fully crystalline, even though the layers are described as having different sizes of crystalline structures therein. Accordingly, Suh's layers do not differ in the amount of crystallinity (i.e., in the degree of amorphous content relative to crystalline content) relative to one another, and therefore Suh does not anticipate the claim 43 recited perovskite-type material having two layers which differ in the degree of amorphous content relative to crystalline content from one another. Applicant notes that Suh also does not suggest the claim 43 recited perovskite-type dielectric material having two layers which differ in the degree of amorphous content relative to crystalline content from one another.

For the reasons discussed above, claim 43 is not anticipated by Suh, nor is claim 43 rendered obvious by Suh. Applicant therefore requests allowance of claim 43 over Suh in the Examiner's next action.

Claims 45, 46, 50, 51, 53, 54 and 58-60 depend from claim 43, and are therefore allowable over Suh for at least the reasons discussed above regarding claim 43.

Claims 61-63 are amended similarly to claim 43 to recite a perovskite-type dielectric material having two layers with a different degree of amorphous content relative to crystalline content than one another. Claims 61-63 are therefore allowable for reasons similar to those discussed above regarding claim 43, and Applicant therefore requests allowance of such claims in the Examiner's next action.

Applicant notes that the Examiner contends that Eastep in combination with Suh suggests a capacitor construction having a perovskite-type dielectric material with two layers differing in the degree of amorphous content relative to crystalline content. Specifically, the Examiner cites Eastep and Suh in combination against claims 45 and 46, and states that Eastep discloses a perovskite-type dielectric material having a first layer less crystalline than a second layer, and contends it would be obvious to utilize Eastep's multilayer material in the applications of Suh. Applicant has reviewed the Eastep reference, and cannot find the teaching referred to by the Examiner of two layers of a perovskite-type dielectric material differing in crystalline and amorphous content relative to one another. The Examiner indicates that such teaching is at col. 2, lines 25-61. Applicant cannot find the teaching within such section of Eastep, and instead finds a teaching that nucleation and crystal growth can be modified by the amount of lead in a PZT ferroelectric film. The teaching that the nucleation and crystal growth can be modified is not equivalent

to a teaching that two layers are formed having different degrees of amorphous content relative to crystalline content from one another. Specifically, disruption of nucleation in crystalline growth can be a disruption of the crystalline orientation rather than a disruption of the amount of crystalline material, and the Eastep reference is concerned with the orientation of crystal domains at, for example, col. 3, lines 38-41. Further, even if the disruption of nucleation and crystalline growth includes alteration of the relative degree of amorphous content to crystalline content, the Eastep reference does not describe or suggest any structure in which it is desired to form the claim 43 recited perovskite-type dielectric material having a different degree of amorphous content relative to crystalline content in one layer of the material versus another layer of the material. The Eastep reference talks about phase transformations of multi-layer PZT materials at, for example, col. 4, lines 26-41, but such transformations are not stated as being utilized in association with a structure comprising two layers of perovskite-type dielectric material having different degrees of amorphous content than crystalline content, and certainly do not suggest a perovskite-type dielectric material having such claim 43 recited two layers while being contained within a capacitor construction. Accordingly, the combination of Eastep and Suh does not render the subject matter of amended claim 43 obvious.

Claims 64 and 65 are objected to as being over Suh in view of Summerfelt.

Independent claim 64, from which claim 65 depends, is amended like the above-discussed claim 43 to recite a perovskite-type dielectric material containing two layers with a different degree of amorphous content relative to crystalline content than one another. Claim 64 is therefore allowable over Suh for reasons similar to those discussed above regarding claim 43. It is further noted that Summerfelt does not disclose or suggest

the claim 63 recited aspect of a perovskite-type dielectric material utilized between a pair of capacitor electrodes, and comprising two layers having the recited compositional aspects and differing in the degree of amorphous content relative to crystalline content from one another. Accordingly, there is no teaching within the combination of Suh and Summerfelt for the subject matter of claim 64. As claim 65 depends from claim 64, such claim is also not rendered obvious by the combination of Suh and Summerfelt.

Claims 47 and 49 are rejected as being unpatentable over Suh in view of Ren.

Claims 47 and 49 depend from claim 43, and therefore contain the above-discussed limitations of claim 43 of a perovskite-type dielectric material utilized between a pair of capacitor electrodes, and comprising two layers having the recited compositional aspects and differing in the degree of amorphous content relative to crystalline content from one another. There is no teaching within Ren of such recited aspects of claim 43. Accordingly, the combination of Suh and Ren does not render claim 43 obvious, and accordingly also does not render the subject matter of dependent claims 47 and 49 obvious.

Claims 43-47, 49-51, 53, 54 and 58-65 are allowable for the reasons discussed above, and Applicant therefore requests formal allowance of such claims in the Examiner's next action.


Also, enclosed is an Information Disclosure Statement with PTO-1449 for consideration by the Examiner.

A **copy** of the Supplemental Information Disclosure Statement and PTO-1449 which was filed on September 2, 2003 is enclosed. Applicant has never received an

initialed copy of this PTO-1449, and respectfully requests the Examiner to initial these references and return a copy of this PTO-1449 with the Examiner's next Action.

Respectfully submitted,

Dated: 12/29/03

By: 
David G. Latwesen, Ph.D.
Reg. No. 38,533

Encl.: IDS; copy of 9/2/03 Supp. IDS